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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,306	04/25/2001	David John Benjamin Pearce	CM00620P	6704

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Jonathan P Meyer
Motorola Inc
1303 East Algonquin Road
Schaumburg, IL 60196

EXAMINER

WOZNIAK, JAMES S

ART UNIT	PAPER NUMBER
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2655

DATE MAILED: 04/13/2004

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/830,306

Applicant(s)

PEARCE ET AL.

Examiner

James S. Wozniak

Art Unit

2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04/25/2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 13-19 is/are rejected.
- 7) ☒ Claim(s) 8-12 and 20-26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04/25/2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Specification

1. The abstract of the disclosure is objected to because “with reference to Fig. 1” is unnecessary and should be deleted.

Correction is required. See MPEP § 608.01(b).

Claim Objections

2. **Claims 8-12 and 20-26** are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim *cannot depend from any other multiple dependent claim*. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. **Claims 1-5 and 13-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa (*U.S. Patent: 5,305,332*) (*U.S. Patent of EP 0459358*).

With respect to **Claims 1 and 13**, Ozawa discloses:

An error mitigating method and apparatus comprising:

Identifying a group comprising one or more of said vectors which have undergone a transmission error (*detecting transmission errors using an error correction decoding circuit, Abstract, and Col. 3, Line 65- Col. 4, Line 5*); and

Replacing one or more speech recognition parameters in the identified group of vectors (*important parameters interpolated and recovered on the basis of information from past and future frames, Col. 2, Lines 63-66*).

Ozawa does not specifically suggest method use in a distributed speech recognition (DSR) system; however, it would have been obvious to one of ordinary skill in the art, at the time of invention, to utilize the error correcting method taught by Ozawa in a DSR system because speech signal reproduction would be a necessary step in the process of recognizing coded speech data and both processes utilize similar speech parameters. Thus, it would have been obvious to use the error correction process taught by Ozawa to in a DSR system, in order to eliminate transmission errors that could lead to errors in speech recognition.

Also, the examiner takes official notice that it is well known in the art to arrange speech parameters as vectors since vectors are a convenient means of representing speech features.

With respect to **Claims 2 and 14**, Ozawa further discloses:

An error mitigating method and apparatus, wherein the one or more speech recognition parameters in the identified group of vectors are replaced by respective replacement parameters

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determined by reference to one or more speech recognition parameters from a vector received after the identified group of vectors (*replacing a speech parameter based on a future parameter from a proper frame, Col. 4, Lines 7-12*).

With respect to **Claims 3 and 15**, Ozawa teaches the error correction system and method that conceals errors by replacing speech parameters from a error-containing frame with speech parameters from past and future correct frames, as applied to Claims 1 and 13. Ozawa does not specifically suggest that the parameter used for replacement is from a frame closest in receipt order to an error-containing parameter; however, it would have been obvious to one of ordinary skill in the art, at the time of invention, that a speech frame in closest proximity to a specific frame would be the most similar, and thus would have similar parameters. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of invention, to select a replacement parameter from a previous or future valid frame that is closest in receipt to a specified frame to ensure that a parameter can be properly replaced without greatly altering the speech signal.

With respect to **Claims 4 and 16**, Ozawa additionally discloses:

An error mitigating method and apparatus, wherein a mode of transmission and a mode of error detection are such that the identified group comprises a pair of consecutive vectors, such that the first vector of the pair is replaced by the second vector of a preceding vector without error and the second vector of the pair is replaced by the first vector of a following vector without error (*interpolating pitch and filter parameters from past and future proper frames to correct transmission errors, Col. 4, Lines 7-12*).

Also, configuring a speech frame so that parameters would be consecutive would have been obvious to one of ordinary skill in the art, at the time of invention, since a speech frame could be coded as specified by a user and thus implement a consecutive speech parameter configuration as a means of organizing a speech frame.

With respect to **Claims 5 and 17**, Ozawa further recites:

An error mitigating method and apparatus, wherein all the speech recognition parameters of each vector of the group are replaced by replacing the whole vectors, and each respective replaced whole vector is replaced by a vector determined by means of an interpolation (*all parameters within a frame replaced using an interpolation technique, Col. 4, Lines 7-12*).

5. **Claims 6, 7, 18, and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa in view of Yeldener et al (*U.S. Patent: 5,774,837*).

With respect to **Claims 6 and 18**, Ozawa teaches the error correction system and method that conceals errors by replacing speech parameters from a error-containing frame with speech parameters from past and future correct frames, as applied to Claims 1 and 13. Ozawa does not teach the method of error detection through comparison of a speech estimate to a threshold, however Yeldener discloses:

An error mitigating method and apparatus, wherein determination of which speech recognition parameter or parameters are to be replaced is performed by predicting fro vectors received without error, a predicted value for each speech recognition parameter within the identified group of vectors, and replacing those speech recognition parameters within the identified group of vectors that are outside of a predetermined threshold relative to their

respective predicted value (*comparing an estimated pitch value to previous values to detect a variation in a speech signal indicative of an error, Col. 13, Lines 37-50*).

Ozawa and Yeldener are analogous art because they are from a similar field of endeavor in transmission error correction of speech data. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to combine the method of estimating a pitch value and comparing it to a threshold for error detection as taught by Yeldener with the error correction system and method that conceals errors by replacing speech parameters from a error-containing frame with speech parameters from past and future correct frames as taught by Ozawa to provide a means of easily detecting an error that is logically identified by a pitch estimate that greatly varies from previous values in order to further correct the error and improve synthesized speech quality. Therefore, it would have been obvious to combine Yeldener with Ozawa for the benefit of obtaining a means of easily detecting an error for correction to further output high quality synthesized speech, to obtain the invention as specified in Claims 6 and 18.

With respect to **Claims 7 and 19**, Ozawa in view of Yeldener teaches the error correction system and method that detects errors by comparing a parameter estimate to a threshold and conceals errors by replacing speech parameters from a error-containing frame with speech parameters from past and future correct frames, as applied to Claims 6 and 18. Ozawa in view of Yeldener does not specifically suggest that all parameters within a frame are replaced if an error number is determined to be significant, however, the examiner takes official notice that it is well known in the art to replace an entire speech frame including all parameters if a specific number of bit errors is detected as is commonly performed in error correcting processes such as a cyclic redundancy check (CRC). Thus, it would have been obvious to replace an entire speech frame

upon exceeding an error limit to correct multiple transmission errors if the errors within a frame are too numerous to recover individual parameters.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Huang et al (*U.S. Patent: 5,636,231*)- teaches a method of error detection and correction that corrects errors by replacing an error vector with a most similar candidate vector.
- Jeon et al (*U.S. Patent: 5,673,363*)- discloses an error concealment method utilizing interpolation of frequency coefficients from neighboring frames.
- Schröder et al (*U.S. Patent: 5,706,396*)- discloses a method of detecting errors through threshold comparison to determine an improper transition in a speech signal and correcting errors by interpolating parameters from known correct frames.
- Asghar et al (*U.S. Patent: 5,991,725*)- teaches a method for detecting errors through parameter variance and correcting errors by smoothing a discontinuity using a parameter from a neighboring frame.
- Minde et al (*U.S. Patent: 6,157,830*)- teaches an error correction method that replaces a speech frame when a error limit is exceeded.

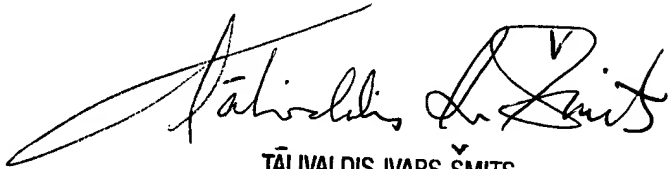
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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (703) 305-8669 and email is James.Wozniak@uspto.gov. The examiner can normally be reached on Mondays-Fridays, 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Talivaldis Ivars Smits can be reached at (703) 306-3011. The fax/phone number for the Technology Center 2600 where this application is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the technology center receptionist whose telephone number is (703) 306-0377.

James S. Wozniak
4/9/2004



TĀLIVALDIS IVARS ŠMITS
PRIMARY EXAMINER